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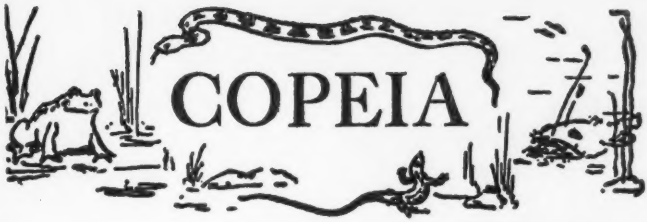

A Journal of Cold-Blooded Vertebrates

ESTABLISHED IN 1913

APRIL-JUNE

No. 171 JUNE 28, 1929

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Published Quarterly by the American Society of Ichthyologists and Herpetologists at Burton Hall, Northampton, Mass. Entered as second-class matter Feb. 11, 1924, at the post office at Northampton, Mass., under the Act of Aug. 24, 1912. Acceptance for mailing at special rate of postage provided for in Sec. 1103, Act of Oct. 3, 1917, authorized Feb. 11, 1924.

NOTES ON FISHES TAKEN IN THE VICINITY OF VINTON, IOWA

During the past few years it has been the habit of the author to collect faunal data in the region of his home while enjoying his summer vacation. The following represent the fish records so taken, within a three mile radius of Vinton, Iowa, in the basin of the Red Cedar River, Benton County. The author is under obligation to W. E. Albert, state game warden, for scientific permit to seine; to Carl L. Hubbs of the University of Michigan for notes concerning recent revisions in nomenclature; and locally to the following: John Scott, Jr., Hollis Wilson, Donald Bordwell, Everett Tilson, Hamilton Tilson, Ronald Leemon, William Franklin, and Glenn Bordwell.

The following streams and ponds were seined: MUD CREEK, one half mile east of Vinton, seined from its mouth, one mile upstream. This is a swift stream with mud banks and mud or sand bottom. Both woodland and prairie conditions were encountered; PRAIRIE CREEK and DUDGEON CREEK can be considered as one locality as that general region is overflowed once or more each year by the Red Cedar River. Prairie Creek empties into the Red Cedar River opposite the northeast part of the city of Vinton. It was seined from its mouth to a point one-half mile upstream where it first forks. In this region it has typically a mud bottom and flows through a wooded region. Note that this is a different Prairie Creek from that in which Prof. Meek seined, which is in southern Benton County (see Potter-Jones article mentioned herein). Dudgeon Creek is a small sandy creek, unlabelled on most maps. It flows through the bottomland of the Red Cedar River and connects several large bayous. Its course varies from year to year. It was followed from its mouth (which for the past few years has been just one-eighth mile upstream from the mouth of Prairie Creek), to the bridges on

the paved road, locally known as "the grade". Woodland conditions prevailed. HINKLE CREEK, a creek flowing through west Vinton, was seined for one-fourth mile in the eastern part of section 24, T 85 N, R. XI W. of 5th P. M., civil township of Jackson. Here the bottom was sand, gravel or mud. Prairie conditions predominated. GOARCKE'S LAKE, usually unlabelled on maps, lies immediately east of the city of Vinton, in that portion of section 15 lying south of the river in T. 85 N., R. X W., civil township of Taylor. This lake is overflowed, though not every year, by both the Red Cedar River and Mud Creek. It has a shallow mud bottom, although the west shore is rocky. From a bluff on the west side, which is lightly timbered, I have seen after a downpour, a bushel or more of land snails washed down to the water's edge. Usually we consider only freshwater snails as a source of fish food. Here land snails must be taken into account also.

In the following notes, all recent changes in nomenclature have been made from notes kindly supplied me by Prof. Hubbs, in a letter of August 10, 1928. Quotations from this letter are given in the footnotes in order to co-ordinate this article with the "Compilation and Revision of the Fish Records Published for Iowa" by George E. Potter and David T. Jones, Iowa Acad. Sci., Vol. XXXIV, pp. 339-366, 1927.

1. *Ictiobus velifer* (Raf.). Formerly known as *Carpiodes difformis* Cope[1]. Found in mud holes along Mud Creek and Prairie Creek.

2. *Carpiodes cyprinus* (Le S.). The quillback formerly known as *Carpiodes velifer* (Raf.)[2]. Both large and small specimens were seined from a muddy hole at the mouth of Prairie Creek in $4\frac{1}{2}$ feet of water. Not taken elsewhere.

1. "*Carpiodes difformis* Cope I find on reviewing the evidence is the form which should be known as *I. velifer* (Raf.)."

2. "The species usually called *velifer* is apparently not distinct from *C. cyprinus* (Le S.)."

3. *Catostomus commersonnii* (Lac.)[3]. Young suckers were found to be plantiful in Mud Creek, Prairie Creek, and Hinkle Creek in the main current. One mature specimen, 25.5 cm. in length, was taken from a hole in the main stream of Mud Creek in about $3\frac{1}{2}$ feet of water, on sand and mud bottom.

4. *Cyprinus carpio* L. One introduced European carp was taken in Goarcke's Lake in quiet, muddy water, $1\frac{1}{2}$ feet deep, on mud bottom. Length 21.7 cm. This specimen was taken at the warm end of the lake, near noon, on a sunny day.

5. *Campostoma anomalum* (Raf.). The stone roller was abundant in Hinkle Creek where the bottom was sandy or pebbly, but only a few were taken from Prairie Creek.

6. *Pimephales promelas promelas* Raf. Of the fathead minnow only one specimen was taken, in a muddy bottomed cut-off of Mud Creek in $3\frac{1}{2}$ feet of water. It was associated with channel cat, suckers, bullhead minnows, and chubs.

7. *Hyborhynchus notatus* (Raf.)[4]. The blunt-nosed minnow is common in Dudgeon and Prairie Creeks, a few were taken in Hinkle Creek.

8. *Semotilus atromaculatus* (Mitchell). Chubs were abundant in Mud Creek and Hinkle Creek. Small ones were taken from Prairie Creek. They are very variable, often a series will vary from typical *atromaculatus* to the description of *Leuciscus elongatus* (Kirtland), the latter form being erroneously reported from Iowa from such variants[5].

9. *Notemigonus crysoleucas crysoleucas* (Mitchill)[6]. The golden shiner is common in Mud Creek and

3. "*Catostomus commersonnii* is the original spelling."

4. "*P. notatus* is now being set apart in *Hyborhynchus*."

5. "*Leuciscus elongatus* should be eradicated from your list. I have studied the one doubtful Iowa specimen (Meek's) and it surely is a hybrid between *Semotilus* and some other minnow."

6. "*Abramis crysoleucas* is not really close to the Old World *Abramis* and should be called (in Iowa) *N. c. crysoleucas* (M.)."

Prairie Creek. The largest one taken was 9.85 cm. long.

10. *Hypargyrus velox* (Girard). Formerly known as *Cliola vigilax* (B. and G.)[7]. The bullhead minnow is very numerous in parts of Mud Creek. Also taken from Goarcke's Lake and Prairie Creek. The females of this species differ from the males in coloration and shape of the first ray of the dorsal fin.

11. *Notropis heterolepis* E. and E. Formerly known as *Notropis cayuga* (Meek)[8]. Only one specimen taken, and that from Mud Creek.

12. *Notropis texanus*? (Girard). Formerly listed under *Notropis blennius* (Girard). The straw-colored minnow is abundant in Prairie Creek and Hinkle Creek. It is now proven to be more than one species[9] but specimens classified as *Notropis blennius* (Girard) were lost by breakage when the author shipped his collections from the University of Utah to the University of Oregon. Species doubtful, and subspecies not determined until more material is secured.

13. *Notropis cornutus* (Mitchill). This shiner was taken in clear, swift water in Hinkle Creek and in Mud Creek; and in quiet, muddy water in Goarcke's Lake and Prairie Creek.[10]

7. "*Cliola vigilax* (B. and G.) is not a valid name for the 'bullhead minnow'. I now believe it should stand as *Hypargyrus velox* (Girard)."

8. "*Notropis cayuga* (of authors)— *N. heterolepis* E. &. E., as I have shown (abundant confirmation at hand)."

9. "*Notropis blennius* as Hubbs and Greene have pointed out, is another fine complex. After examining further type specimens here, I find these forms to be:

Notropis texanus texanus (Girard)
Notropis texanus volucellus (Cope)
Notropis deliciosus missuriensis (Cope)
Notropis deliciosus delicosus (Gir.)
Notropis deliciosus stramineus (Cope)

The Iowa records of *blennius* I presume are based on *volucellus* and intergrades between *volucellus* and *texanus*, and on *missuriensis*. The Ottumwa record at least refers to the last named form."

10. "*Notropis cornutus* is represented in Iowa by *N. c. crysocephalus* (Raf.), *N. c. frontalis* (Ag.) and intergrades between the two subspecies."

14. *Notropis blennius* (Girard). Formerly known as *Notropis jejunus* (Forbes)[11]. Taken only once in Mud Creek.

15. *Phenacobius mirabilis* (Girard). The sucker-mouthed minnow was common in Hinkle Creek.

16. *Ictalurus punctatus* (Raf.). Eight young channel cat were taken in one drag in a cut-off portion of Mud Creek. Two were taken at different times in the main stream.

17. *Ameiurus melas* (Raf.). The black bullhead is common on muddy bottoms and in sluggish water, but occasionally occurs in clear currents. Found in Mud Creek, Hinkle Creek, and Goarcke's Lake.

18. *Fundulus notatus* (Raf.). Of the top minnow only one specimen was taken, in Prairie Creek, where there were mud banks, sandy bottom, and clear running water. Length 50 mm.

19. *Pomoxis annularis* (Raf.). Young were of common occurrence in lower parts of Prairie and Dudgeon Creeks.

20. *Apomotis cyanellus* (Raf.)[12]. The green sunfish was taken at all localities visited. It prefers shallow water.

21. *Allotis humilis* (Girard)[13]. The orange spotted sunfish is very abundant and brightly colored in Goarcke's Lake in muddy water. Because of the brilliancy and delicacy of its color pattern it is locally known as Japanese sunfish. Less brilliant specimens were taken in Mud Creek and Prairie Creek.

22. *Helioperca incisor* (C. and V.). Formerly known as *Lepomis pallidus*[14], and commonly known as the bluegill. It is quite common in Prairie Creek, Dudgeon Creek, and Goarcke's Lake.

11. "*Notropis jejunus* Forbes is the true *N. blennius* (Girard)."
12. "*Lepomis cyanellus* I have referred to *Apomotis*."
13. "*Lepomis humilis* is so distinct in skull structure that I have placed it in a distinct genus *Allotis*."
14. "*Lepomis pallidus* is better called *Helioperca incisor* (C. & V.)."

23. *Aplites salmoides* (Lac.)[15]. Only one black bass minnow was taken at the mouth of Prairie Creek. Length 4.75 cm.

24. *Boleosoma nigrum* (Raf.). More specimens of the Johnny darter were taken from Mud Creek than elsewhere. It was found on sandy or pebbly bottom in swift current. Taken also from Prairie Creek and Hinkle Creek.

In a small collection, as this one is, general conclusions should not be drawn as to preference for different habitats, associations among species, and abundance or scarcity in a region. Since many fish travel in schools, the author may have been misled as to the relative abundance of some species. Other swift species may have eluded the net. Weather conditions, seasonal and physiological changes probably have much to do with the activity of fish, hence fish taken one season may apparently be absent the next season. Changes in feeding habits when seasonal changes diminish or increase food supply, may be a factor. Changes in light have much to do with the appearance of sunfish, and possibly of other species. The need at present in Iowa, is not for the forming of general conclusions, but rather a collection of field and laboratory data.

DAVID T. JONES

Marietta College
Marietta, Ohio.

PSENES CYANOPHRYS, AN OCEANIC FISH, NEW FOR THE FAUNA OF THE U. S.

Psenes cyanophrys Cuvier and Valenciennes is one of the oceanic fishes which has been recorded from many seas. To be sure, several names have been applied to specimens from isolated localities in the Indo-Pacific area, but these do not appear to mark distinct species. These apparent synonyms are listed

15. "*Mircopterus salmoides* is worth a distinct genus (*Aplites*)."

by Jordan and Evermann (1896, p. 951). Lütken (Vidensk. Selsk. Skr., 5, 12, 1880, p. 518) has reported the species from a wide area in the tropical Atlantic, the vicinity of Martinique and Jamaica included. Fowler (Proc. Acad. Nat. Sci. Phila., 58, 1906, p. 120, fig. 3) has separated the Atlantic form under a new name, *Psenes chapmani*, and has recorded specimens from northwest of the Lesser Antilles. The northernmost locality from which the species has been listed in the western Atlantic is apparently Green Cay, Bahama Islands (Bean, in Shattuck, The Bahama Islands, 1905, p. 304).

Other species of *Psenes* have been recorded from the tropical and subtropical western Atlantic, but so far as I know, none has ever been listed from our North Atlantic coast, with the exception of the very distinct, fine-scaled *Psenes edwardsii* Eigenmann (Bull. U. S. Fish Comm., 22, 1902, p. 35, fig.).

It was therefore an interesting surprise to find a fine example of *Psenes cyanophrys* in a collection of rudderfishes (*Palinurichthys perciformis* and *Seriola zonata*), made for us by Gerrit Bevelander off southern Long Island. It was obtained off Great South Bay, from an ocean trap of the Long Island Fish Company, set in 35 to 60 feet of water on a sandy bottom.

This specimen, 135 mm. long to caudal base, is in preservative a deep purplish brown, with lighter streaks between the scale rows, which parallel the lateral line above but are horizontal below the lateral line. The fins are purplish black overlying olive, except the caudal, which is merely dusky olive. The body, though deep (greatest depth, 1.9 in standard length), is not ungraceful in outline. The dorsal contour is highest before its middle, the ventral contour lowest behind its middle. The caudal peduncle only one-fifth as deep as the body. The depth through the vertical from the end of opercle is more than half greater than the length of the head, which, however, is distinctly greater than the depth of the

head from occiput to isthmus. The length of the head is contained 3.4 times in the total. The forehead is strongly arched, and the outline of the muzzle is about vertical for a distance two-thirds length of eye. The eye, which is contained 4.4 times in the head and 1.4 times in the snout, is about as distant from the dorsal as the ventral contour of the body. The jaws are about equal; the upper enters 3.6 times into the head.

Dorsal, IX, I, 25; anal, III, 26. The pectoral is a pupil's length longer than the head; the pelvic, only half as long as head. The shortest caudal rays are only two-fifths the longest. There are 58 scales in the lateral line from shoulder girdle to caudal base.

CARL L. HUBBS

Museum of Zoology,
Univ. of Michigan,
Ann Arbor, Mich.

NOTES ON SOLES RELATED TO *ACHIRUS*

Dr. Paul Chabanaud has recently given us a very fine review of the American flatfishes related to *Achirus.** A number of characters hitherto unemployed are used in the delimitation of the apparently well defined genera, which are more numerous than had generally been suspected. Unfortunately, Dr. Chabanaud's choice in a few nomenclatorial matters has not been happy.

In the first case, the species grouped under *Baiostoma* (emended to *Baeostoma*) Bean 1882 (type *B. brachiale* Bean 1882=*Solea gronovii* Günther 1862) are placed by Chabanaud in two subgenera, to each of which a new name is given. This is totally unwarranted by the rules of nomenclature which require that the name of the typical subgenus be identical with that of the

*Bull. l'Inst. Oceanographique, Monaco, No. 523, Sept. 1928.

genus. The genotype of *Anathyridium*, not indicated by Chabanaud, is hereby fixed as *Solea gronovii* (=*B. brachiale*) and the name then falls as an absolute synonym of *Baiostoma*. Further, to avoid future confusion, the present writer hereby fixes the following types: *Catathyridium* (*Solea jenynsii*), *Hypoclinemus* (*Solea mentalis*), and *Nodogymnus* (*Gymnachirus fasciatus*).

The obvious type by tautonomy of the genus *Achirus* itself is *Pleuronectes achirus* Linné 1758, which species, however, Dr. Chabanaud finds himself utterly unable to identify. Yet he retains the generic name *Achirus*. Jordan finds it necessary to identify Linné's *achirus* from Surinam with Günther's *gronovii*, and there seems no good reason why this should not be done. It is entirely in accord with the known distribution of *gronovii* and is the only logical course to follow. Otherwise, if we wish to be consistent, we must abandon the time-honored *Achirus*, and the family or sub-family name based on it. Most of us, including Dr. Chabanaud, are unwilling to do this.

The recognition of the identity of *A. achirus* with *gronovii* involves some of the names used by Dr. Chabanaud. His *Baiostoma* must give way to *Achirus*, and his *Achirus* must be known as *Trinectes*. The changes involved follow in tabular form.

ACHIRUS Lacépède 1803

Type *A. achirus* Linné 1758.
=*Baeostoma* Chabanaud 1928.

1. *Achirus* (*Achirus*) *achirus* (Linné) 1758; 2. *Achirus* (*Achirus*) *klunzingeri* (Stdr.) 1880; 3. *Achirus* (*Achirus*) *mazatlanus* (Stdr.) 1869; 4. *Achirus* (*Achirus*) *scutum* (Günther) 1862; 6. *Achirus* (*Catathyridium*) *grandirivi* (Chab.) 1928; and 7. *Achirus* (*Catathyridium*) *jenynsi* (Günther) 1872. (See below for *A. barnharti* Jordan.)

TRINECTES Rafinesque 1832

Type *T. scabra*=*fasciatus*.
=*Achirus* Chabanaud 1928.

1. *Trinectes fasciatus* (Lac.) 1802; 2. *Trinectes austrinus* (Chab.) 1928; 3. *Trinectes fonsecensis* (Günther) 1862; 4. *Trinectes inscriptus* (Gosse) 1851; 5. *Trinectes microphthalmus* (Chab.) 1928; and 6. *Trinectes fimbriatus* (Günther) 1862.

Dr. Chabanaud has doubtfully referred *Achirus barnharti* Jordan 1923 to the synonymy of *A. fimbriatus*. I have carefully examined the type of *barnharti* and find that it does not belong to Chabanaud's "*Achirus*" (=my *Trinectes*) but instead to the genus he calls *Baeostoma* (=*Achirus* in our sense), the specimen having the interbranchial fenestra present. It is a member of the subgenus *Achirus* S. Str. (= *Anathyridium*), but differs from all in the subgenus in the total absence of both pectorals.

GEORGE S. MYERS

Stanford University
California.

A RAG FISH (*ICOSTEUS AENIGMATICUS*) FROM QUEEN CHARLOTTE ISLANDS, B. C.

A specimen of *Icosteus aenigmaticus* Lockington, taken September 25, 1928, in Werner Bay, Juan Perez Sound, Q. C. I., was sent for identification to the Pacific Biological Station, Nanaimo, by Mr. Alexander and Mr. Jas. R. Townsend of the Canadian Fishing Co. Ltd., Vancouver, B. C. This specimen which is $8\frac{1}{4}$ inches in length was taken by the seine boat "Shizuoka" when making a haul for chum salmon (*O. keta*).

A. L. PRITCHARD

Pacific Biological Station,
Nanaimo, B. C.

FURTHER RECORDS OF *ALEPISAURUS FEROX* FROM THE ALEUTIAN ISLANDS

The following records were furnished by Mr. George A. Rounsefell of the U. S. Bureau of Fisheries. It is interesting to note that all of the records are from apparently shallow water, although this fish has been thought of usually as a deep sea form.

Other specimens than those here recorded were reported taken or seen by herring fishermen. All of these records are from near Dutch Harbor.

August 18, 1928. Specimen kicked out on beach at Dutch Harbor.

August 19. A dead specimen found on the beach at Unalaska.

August 29. A specimen shot with pistol at Dutch Harbor.

All specimens were reported as over four feet long.

Other records from the same region are as follows: (Jordan & Evermann, Fishes of North America, Vol. I, pp. 595, 597).

Alepisaurus aesculapius. 1. Type specimen speared at Unalaska by Robert King. 2. Another specimen taken at Unalaska by Dr. W. H. Hall.

Alepisaurus borealis. 1. Specimen collected at Captain's Harbor, Unalaska. 2. Another specimen collected from the Aleutian Islands. (Collector not recorded.)

Specimens of *Alepisaurus* have been taken off the Kurile Islands of Japan, which suggests this fish has a wide distribution in the north Pacific. Probably it is a common inhabitant of shallow waters in this region and it is expected many more records will be made as commercial fishing increases.

D. R. CRAWFORD

College of Fisheries,
Univ. of Washington.

NEW RECORDS FOR THE QUILL-FISH, *PTILICHTHYS GOODEI* BEAN

The quill-fish, *Ptilichthys goodei* Bean, represents the only species and genus of the family *Ptilichthyidae.* It was first reported from the Aleutian Islands in the original description by Bean[1]. This specimen was 160 mm. long, taken at Port Levasheff, Unalaska, Aleutian Islands. Another specimen used in this description was 302 mm. taken at Unalaska. The third specimen collected of this fish was "dredged in shallow water at Unalaska Harbor at a depth of 85 fathoms," as reported by Gilbert[2]. Other important references to the quill-fish are found in accounts by Jordan and Gilbert[3], and Jordan and Evermann[4].

Since these earlier reports record it from only the Aleutian Islands at Unalaska, the following notes point out a considerable extension of range. A specimen was recorded as *Ptilichthys* sp., "taken when observed swimming in a salmon trap at Haystack Island," British Columbia, next to the Alaskan boundary, in a report by Williamson[5]. He states, "It was amber green color and measured 6.5 inches in length."

Dr. C. L. Hubbs informed me of a specimen belonging to Prof. J. R. Dymond, Department of Biology, University of Toronto, who very kindly gave me permission to publish his record of the quill-fish, taken "off Parlier Pass in Trincomali strait, Vancouver

1. Bean, T. H. Description of New Fishes from Alaska and Siberia. Proc. U. S. Nat. Mus., Vol. 4, 1881, pp. 144-159.
2. Gilbert C. H. The Ichthyological Collections of the Steamer Albatross during the Years 1890-1891. Rept. U. S. Fish. Comm. Vol. 19, 1893, pp. 393-476 (p. 453).
3. Jordan and Gilbert, A Synopsis of the Fishes of North America. Bull. U. S. Nat. Mus., Vol. 16, 1883, p. 369.
4. Jordan and Evermann, Fishes of North and Middle America. Bull. U. S. Nat. Mus., No. 47, Pt. III, pp. 2451-2452.
5. Williamson, H. Chas. Pacific Salmon Migration; Report of Tagging Operations in 1925. Contr. Canadian Biol. and Fish. (N. S.) Vol. 3, (9), 1927, p. 33, fig. 3-4.

Island, July 8, 1928, by Dr. W. A. Clemens, Director of the Pacific Biological Station, Vancouver Island."

The specimen which I have at hand measures 131 mm. to the posterior end of the dorsal and anal fins, its greatest depth is 2 mm. Part of the caudal filament appears broken off, otherwise it agrees with previous descriptions. This fish was taken from a live tank on the Marine Station float at Friday Harbor, July 20, 1916. Another specimen is reported on the data slip for July 12, 1916, but was lost. Dr. Kincaid, University of Washington, collected both specimens.

Ptilichthys goodei Bean was not mentioned by Hubbs[6] in his recent Check-list of the Marine Fishes of Oregon and Washington, and to my knowledge these are new records for both Washington and Vancouver Island. This totals six specimens now preserved in fish collections, representing a range from Unalaska, Aleutian Islands to Puget Sound, Washington.

LEONARD P. SHULTZ

College of Fisheries,
Univ. of Washington.

UNPIGMENTED ELVERS (*ANGUILLA ROSTRATA* LESUEUR) IN HADDOCK STOMACHS AT INGONISH, CAPE BRETON

During the latter half of May, 1928, numbers of small elvers (*Anguilla rostrata* LeSueur) were found in haddock stomachs at Ingonish, Cape Breton. In this locality a trap-net fishery depends on haddock which approach close to the shore during the close of their

6. Hubbs, C. L. Check list of the Marine Fishes of Oregon and Washington. Jour. Pan-Pacific Research Inst. Vol. 3, (3), 1928, pp. 9-16.

spawning season. The haddock are caught at or near the bottom in twelve to fifteen fathoms of water and are never seen near the surface. The trap-nets are set in the more exposed positions—not towards the heads ot bays.

At this season haddock feed very sparingly; over two-thirds of the stomachs examined were empty and all others contained only very small amounts of food. On May 14 and 15 (the earliest haddock catches) 19 out of 105 stomachs containing food, had elvers in them, sometimes as many as twelve in one stomach. On May 22 no elvers were found in 53 stomachs containing food. On May 28 and 29 twelve out of 146 stomachs had elvers, but never more than two or three. On June 4 a single elver was found in one of twelve stomachs containing food. Of numerous haddock stomachs examined later in June none contained elvers. The large numbers found on May 14 and 15 combined with the small amount of feeding by the haddock at this season and their preference for slow moving bottom forms indicates that elvers were abundant at that time.

The elvers were 5.0 to 6.5 cms. in length, entirely without pigment and transparent, but had practically the adult form of *Anguilla rostrata*.

Other species of fish at times visit Ingonish on their way into the Gulf of St. Lawrence, e.g., haddock and mackerel, and it is possible that we are dealing here with part of the migration of elvers to the waters tributary to the gulf. However, adult eels are abundant in the harbour of South Bay, Ingonish and the destination of the elvers can only be conjectured.

A. W. H. NEEDLER

Department of Biology,
Univ. of Toronto,
Toronto, Canada.

FISH NOTES FOR 1928 FROM SANDY HOOK BAY

The year of 1928 was marked by a larger variety and greater quantity of young fishes than any since this series of observations was initiated. In the early part of the season, May to July, *Cynoscion regalis* (Bloch and Schneider) were present in numbers satisfactory to the pound netters. Later than this they fell off and the latter part of the season was ample cause for the fishermen to complain of their luck. As has been noted previously there has been a steady decline in the commercial productivity of this bay during the last six years and this one was an exception to it only in the considerable influx of weakfish. *Brevoortia tyrannus* (Latrobe) were present in greatly reduced numbers. As usual, this was especially noticeable when the weakfish were running highest.

The above and the following notes are all based on observations or specimens collected by Albert C. Redmond who took the place in the field this year of the author of the earlier notes.

Acipenser oxyrhynchus Mitchill.

Two specimens of about seven feet were observed in May and September respectively. Sturgeons of this size are rare in Sandy Hook Bay, last year yielding the first one of any considerable size for a long time.

Tarpon atlanticus (Cuvier and Valenciennes).

A specimen of about five feet in length was taken in a pound net July 12. This lived in the Aquarium for about a week. Another of similar size was reported in September. One about half that size was taken at Atlantic City (Young's Million Dollar Pier) according to Dr. C. H. Townsend, also this summer. This would suggest that an unusual number drifted north.

Strongylura acus (Lacépède).

A female, not quite ripe of about three feet was taken in a pound net on July 19. A new record for the Bay.

Sphyraena borealis DeKay.

Small examples of 80 or 90 mm. were not rare in August.

Mullus auratus Jordan and Gilbert.

A single specimen of 55 mm. standard length was seined near the tip of Sandy Hook on July 19. A little later three more of about the same size were similarly taken. This represents a new definite record for the Bay.

Trachinotus falcatus (Linnaeus).

One in 1922, one in 1925, three in 1927 and about two dozen this year. All small, not over 35 mm. It would seem that this species is definitely increasing in frequency.

Trachinotus carolinus (Linnaeus).

Although not as uncommon as last year the young of this species was not nearly as abundant as in most of the other years. This is in spite of the fact that more shore collecting than usual was engaged in. However, four examples of over a foot were taken in the pound nets. None this size had been seen since 1920.

Leiostomus xanthurus Lacépède.

Many small examples of between 20 and 30 mm. were found close to shore in June. Usually fish less than 70 or 80 mm. are rare in the Bay.

Lobotes surinamensis (Bloch).

Five from July 12 to September 23. All between one and one-half to two feet long.

Chaetodipterus faber (Broussonet).

Two examples. July and September.

Achirus fasciatus Lacépède.

One specimen in August and another in September. Not seen since 1921 when one was taken.

The presence of *Strongylura acus* and *Mullus auratus* brings the list of species definitely recorded from Sandy Hook Bay to one hundred and sixteen.

C. M. Breder, Jr.
A. C. Redmond

New York Aquarium

MITES ON *SCELOPORUS*

The writer directs attention to the numerous external mites found so commonly beneath the scales of the so-called "fence-lizards," (*Sceloporus undulatus*, Linne). Ectoparasites of the same order have also been observed on many other species and it is therefore rather odd that so far as can be ascertained there seems to be such an evident lack of literature.

The heaviest infestations are usually found about the region of the shoulder and the writer has observed a few of the "fence-lizards" attempting to dislodge their uninvited guests by rubbing their bodies against some object altho the tenacious arachnids were not to be so easily banished, particularly those situated behind the cervical fold which seemed to harbor the more immature stages rather than the adults.

The species of which *Sceloporus* is the host is known as *Geckobiella texana*, Banks. It has a rather slender beak which projects but little in front of body. The tarsi end in two claws. Its length of 1.1 mm. is considered a rather large size for a mite. Type specimens

described from Austin, Texas. The writer's mites come from Marion County, Florida. Their abundance on the lacertilian give them a somewhat tumid appearance and also seem to lessen their vitality.

The writer is indebted to Dr. E. H. Ewing, well-known authority on the Acarinas, for the determination of the mite *Geckobiella texana*, Banks.

PINNEY SCHIFFER

20 First Ave.,
New York City.

A DISTRIBUTIONAL LIST OF THE AMPHIBIANS AND REPTILES OF UTAH
No. 3*

The history of herpetology of the western United States is replete with fascinating adventure. The early explorer and collector traversed great unknown stretches with poor supplies of food (Fremont 1845, pp. 143, 149, 154, 158-9, 267, etc.) and in constant fear of the Indians (Fremont 1845, pp. 267-70 and Stansbury 1852, pp. 148-9). Transportation was difficult and collecting materials and facilities meager and inadequate. As a result very few specimens reached the centers of herpetological activity of the Atlantic coast until about 1870. It seems that Captain Fremont did not collect in Utah, however, he collected some specimens in California (Stansbury 1852, p. 349). The first reptiles, therefore, to be taken in Utah for scientific study were collected by Captain Stansbury and his party during the years 1849-50. This remarkable party collected six species in Utah, three of them were new to science. The genus *Phrynosoma* which was so ably monographed by Girard in this report was later studied and the Salt Lake Basin specimens

*Contribution from the Zoological Laboratories of the Brigham Young University, Provo, Utah, No. 17. List No. 1 was published in Copeia No. 163 and No. 2 in Copeia No. 166.

figured and named *Phrynosoma ornatum* Girard. (Girard 1858.)

In 1871 Professor E. D. Cope reported on the reptiles of the Hayden Survey. In this report he listed nine reptiles but no amphibians. Campbell Carrington, zoologist of the party collected, for the first time, many interesting Utah fish.

Dr. H. C. Yarrow and Mr. H. W. Henshaw, naturalists of the Wheeler Survey, collected in 1872 the largest single collection that was made by the early workers. Eight species of amphibians and twenty-two species of reptiles were listed by Dr. Yarrow. Several of the species of this report such as *Sceloporus consobrinus* B. & G., *Plestidon obsoletus* B. & G. and *Salvadora hexelepis* (Cope) are open to question. They were listed probably because of misidentification and incorrect locality labels. We may also question on the same grounds a single specimen of *Kinosternon flavescens* (Agassiz) No. 8185 now in the National Museum collection which is labeled "Utah?". This specimen is reported to have been collected in Utah by Lt. Wheeler, but because it was not included in the Yarrow list of the Survey report and since a study of the itinerary of the parties of the Survey shows that they were not in the southeastern part of the state, where we would expect to find this species and in view of the fact that specimens of this species were taken in New Mexico and Arizona, it is very doubtful if this specimen was taken in Utah. Last summer (1928) while I was studying certain specimens in the reptile collection of the National Museum, I was told by members of the staff that many of the specimens of the early Survey collections arrived in Washington in a badly mixed up condition, many of them without locality labels. This may account for what seems to be mistakes in some of the state records.

The fourth important collection from Utah was made by members of the Death Valley Expedition in 1891. Dr. Leonhard Stejneger in his report lists

eleven species of reptiles but no amphibians. All the collecting was done in the southwestern part of Washington County.

In 1915 Dr. John Van Denburgh and Mr. Joseph Slevin reported on a collection of reptiles and amphibians made in Utah during the summer of 1913 by the junior author. Seven species of amphibians and eighteen species of reptiles were listed. In Dr. Van Denburgh's outstanding contribution—Reptiles of Western North America—he lists forty-one species of reptiles for the state of Utah, however, some of these are questionable records.

During the summer of 1917, Mr. Geo. P. Engelhardt of the Brooklyn Museum, collected in parts of Washington County. Six specimens of amphibians were studied.

Dr. Alex. G. Ruthven of the University of Michigan spent some time collecting in Utah during the summers of 1925 and 1926.

Dr. Herbert J. Pack of the Utah Agricultural College has been collecting Utah reptiles for the past fifteen years. He has published many interesting facts concerning the reptiles of this region.

Mr. Angus M. Woodbury of the University of Utah has studied the reptiles of Zion National Park.

For the past twelve years the writer has been collecting reptiles and amphibians of Utah and the adjoining states. Expeditions from the Brigham Young University has greatly increased this collection as well as added to our knowledge of the reptile fauna of the state. During the past summer many specimens from northwestern Utah, southern Idaho, and the region along the Utah-Nevada state boundary line, from Idaho to St. George, were added to the collection. Space will not permit a presentation of notes on these species at this time. Thirteen species of Amphibians and forty-one species of reptiles from Utah are now in the University collection.

Small collections other than the above, have been made by various collecting parties and individuals as may be seen from the bibliography of this paper.

The following is a list and notes on specimens and species new to the collection since report No. 2 was published.

52. *Rana onca* (Cope).

A search of several years, for this species, finally ended successfully when two specimens were taken in June, 1928, in a small stream south of St. George. While Dr. Yarrow does not give the exact locality for this species yet from his itinerary and subsequent collections we are reasonably sure in concluding that he captured his specimens somewhere along the Virgin River in Washington County.

53. *Lampropeltis pyromelana* (Cope).

One specimen of this beautiful king snake was taken at Harmony, Washington County in August, 1928, by Mr. John E. Blazzard who contributed the specimen to the University Collection.

54. *Hypsiglena ochrorhynchus ochrorhynchus* (Cope).

I was greatly elated upon capturing a specimen of this rare Utah serpent in Zion National Park on August 29, 1928. About five o'clock in the afternoon while collecting near the "Narrows" I rolled a large cottonwood log over and found this specimen coiled beneath it. It had evidently just had its evening meal as I removed a *Hyla arenicolor* Cope from the anterior part of the alimentary tract which was only slightly digested.

NOTE. Two very interesting specimens of *Thamnophis ordinoides vagrans* (B. & G.) were taken at a spring near Mount Myria south of the Deep Creek Mountains. These are pure black melanistic specimens of this species. A specimen, No. 1117, was submitted to Dr. Stejneger of the National Museum who identified it as the above. It is also probably worth recording that the only species of amphibian collected

between the Raft River Mountains and Enterprise, Washington County was *Scaphiopus hammondii* Baird. Just why *Rana pipiens* and other species were not found in this desert region is rather puzzling. A parallel of this is found in the absence of oaks in this same region. These plants are common throughout the Wasatch and eastern part of the state, but from the time we left Brigham City until we reached Enterprise we did not find a single oak.

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VASCO M. TANNER
Brigham Young University
Provo, Utah

NOTE ON THE YOUNG OF *STORERIA DEKAYI*

The mother of the brood observed was a very large Dekay's snake (*Storeria dekayi*) found at Freeport, L. I. Her length was 440 mm.

She was placed in a cage with a floor area of about two square feet. There were four garter snakes in with her. The cage bottom was covered with gravel. A handful of dried grass furnished a hiding place.

This Dekay's had been a captive for about three weeks when the first young were discovered. On August 14 she could not be seen in the cage. I lifted the bunch of grass and found her coiled quietly beneath with two little ones nearby. One was coiled up, dead. The other was alive, and wriggled away beneath the water pan. Both young were saved, the dead one in alcohol, and the other in a box.

August 16 several more young were found, all dead. I did not count them, but left them in the cage.

August 17 three young were taken out alive, and sixteen were found dead. The total number of young was then four living, and (adding the first one found) seventeen dead, giving twenty-one young for the brood. The young were born over a period of four days.

The length of the young shortly after birth varied with individuals, from 100 to 107 mm.

The death of most of the brood seemed to have been caused through the inability of the young to break through the foetal membrane. A few had managed to break through but were apparently crushed by the activity of the garter snakes.

The young do not closely resemble the adult Dekay's. The dorsal side is a dark gray with just a suggestion of irridescent bronze tinting. This is in strong contrast to the light brown of the adult. The spotting of the young is indistinct. The under side is gray. About the rear part of the head and a part of the neck is a distinct band of dulled white which is lost in the gray of the side and throat. On the posterior edge of this band, and just to each side of the dorsal line are two conspicuous black spots. On the adult no such white band occurs, and the two large dots merge into a short irregular bar across the top of the neck.

The four living young were placed in a separate box. They were active and curious as to what was outside their four limiting walls. A stone and some grass were placed with them, and they soon moved beneath these hiding places. On the third day the first one born drank for the first time. The others drank at various periods after that. They ate no food. On the eighth day one died. I fed the other three with very small white worms. The next day all were dead.

A fold of loose skin appeared on the back of the mother after her reduction in diameter caused by the birth of the young. This skin was shed about three weeks later.

FRANCIS B. SHIELDS

American Museum of
Natural History,
New York City

NOTES ON THE SEX DETERMINATION IN A SPECIES OF THE GALAPAGOS TORTOISE

While with the New York Zoological Society Galapagos Expedition of 1928, under the leadership of Dr. C. H. Townsend, (see Bulletin New York Zoological Society, Vol. XXXI, No. 5), I acquired the following information of this text from my native guide, an Ecuadorian settler called Garcia.

On the long march back to the coast from the interior of volcano scarred southeastern Albemarle, food gave out. Tortoise were at hand and solved the immediate problem. Before killing the shelled reptiles, I asked about their sex, and subsequent examination of the generative organs and the cloaca completely checked the statements of my native guide.

Van Denburgh in the "Gigantic Land Tortoises of the Galapagos Archipelago," published by the California Academy of Sciences, Vol. II, Part I, fourth series, speaks of the concave plastron often being seen in the males, and attests to the fact that the females are broader than the males. He also mentions that the lower jaw and throat in males is sometimes marked with yellow, in the species that we probably secured, *Testudo güntheri* Baur, the Villamil Mountain Tortoise.

MALE	FEMALE
1. Anterior marginal shields are coarse, thick, and heavy.	1. Anterior marginal shields are light, thin, and taper towards the edges.

2. Region of posterior marginals narrow and rounded towards the posterior extremity as the curvature of the domed carapace.	2. Region of posterior marginals wide and flaring.
3. Plastron deeply concave in large adult specimens.	3. Plastron plane, not concave.

In our native species the last character (3) at least is present in *Emys*, *Clemmys*, *Terrapene*, and *Gopherus*.

Of the 180 specimens secured by myself and the natives of Villamil colony, probably *Testudo güntheri* Baur, many are over 14 inches in straight length. The above tabulated key will probably hold good in all cases of those over the 14 inch measurement.

C. Ralph De Sola

333 Central Park West,
New York, N. Y.

NOTES ON *CHROMIS OVALIS* AND *C. RETICULATUS*

Heliastes ovalis Steindachner (Denkschr. K. Akad. Wiss. Wien LXX, 1901, p. 502) from Honolulu is a species of *Chromis* (family Pomacentridae), but its name is invalidated by *Chromis ovalis* proposed earlier by the same author (Verh. Zool.-Bot. Ges. Wien 1866, p. 761, pl. xv, fig. 2) for a Cichlid fish from Angola. Confusion would be avoided if the name *Chromis velox* Jenkins (Bull. U. S. Fish. Comm., xix, 1899 [June 8, 1901], p. 393, fig. 6) be used for the Hawaiian species called *Chromis ovalis* by Jordan & Evermann (Bull. U. S. Fish. Comm., xxiii, 1, 1903 [July 29, 1905], p. 269, fig. 114.)

Another possible source of perplexity may be mentioned here. *Chromis reticulatus* Fowler & Bean (Bull.

U. S. Nat. Mus. 100, vol. vii, 1928, pp. 30 and 40) is not invalidated by *Heliases reticulatus* Richardson (Rept. 15th. meet. Brit. Assoc. Adv. Sci. 1845 [published late 1846], p. 254), as might be suspected, as Richardson's species enters *Pellochromis* Fowler and Bean which is quite distinct from *Chromis*.

GILBERT P. WHITLEY

The Australian Museum,
Sydney, N. S. W.

SNAPPING TURTLE IN FEBRUARY

February 16 was a warm, spring-like day in Cambridge. The Charles River was still frozen over tightly and covered with snow, but here and there the ice had melted from the small estuaries exposing the muddy bottom. While crossing one of these I caught sight of a young Snapping Turtle (*Chelydra serpentina*) resting motionless in the mud. When I pulled him out of the water he seemed rather weak and lifeless, not at all aggressive. His eyes opened slowly but his jaws remained closed. When brought home and placed in a bowl of warmer water he made sluggish movements as though trying to dig into the sides, then became motionless again. Having no other food nearby, I placed a piece of cheese before him w ıich he immediately seized with a lightning dart of the head. He swallowed the cheese, trying all the time to tear away pieces that weren't there with his claws. Another morsel was placed before him, but he couldn't be induced to swallow any more.

Carapace measured 4.8 cm. Temperatures of previous week: Feb. 10, 38°F.; 11, 29°; 12, 26°; 13, 20°; 14, 28°; 15, 32°; 16, 37°.

LAWRENCE KILHAM

Cambridge, Mass.

COPEIA is the Journal of the American Society of Ichthyologists and Herpetologists. Subscription for 1929, $2.00; 50 cents per copy. Dues to the Society, $2.00 a year, including subscription to Copeia.

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